

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (original): Process for cross-flow filtration of a fluid to produce a flow of concentrate and a flow of filtrate using a filtration device having a plurality of rotating membrane discs mounted on at least first and second hollow shafts, each of the membrane discs having a hollow disc body in fluid communication with the associated hollow shaft and first and second membrane surfaces, the membrane discs mounted on a one of the hollow shafts overlapping the membrane discs mounted on another of the hollow shafts in an overlap area, the process comprising the steps of:

rotating the hollow shafts and the membrane discs mounted thereon at a rotational speed;

introducing the fluid into at least the overlap area of the filtration device;

creating overflow speeds at the membrane surfaces in the range of 1 to 5 m/sec;

creating a turbulence between the membrane surfaces of at least two membrane discs in the overlap area;

diffusing a portion of the fluid through the membrane surfaces of the membrane discs into the hollow disc body to create a permeate within the hollow disc body and a concentrate exteriorly of the membrane surfaces;

collecting the permeate within the hollow shaft from the hollow disc bodies of the membrane discs mounted thereon;

discharging the permeate from the hollow shaft as the flow of filtrate; and

discharging the flow concentrate from the overlap area at an overpressure.

2. (original): Process according to claim 1, wherein the membrane discs have a rectangular cross section.

3. (original): Process according to claim 1, wherein the membrane discs have a triangular cross section.

4. (original): Process according to claim 1, wherein each of the membrane discs have different rotational speeds.

5. (original): Process according to claim 1, further comprising the step of discharging the permeate at a vacuum.

6. (original): Process according to claim 5, wherein the vacuum is up to 0.5 bar.

7. (original): Process according to claim 1, wherein the overpressure is 10 to 14 bar.

8. (new): Process for cross-flow filtration of a fluid to produce a flow of concentrate and a flow of filtrate using a filtration device having a plurality of rotating membrane discs mounted on at least first and second hollow shafts, each of the membrane discs having a hollow disc body in fluid communication with the associated hollow shaft, a triangular cross section, and first and second membrane surfaces, the membrane discs mounted on a one of the hollow shafts overlapping the membrane discs mounted on another of the hollow shafts in an overlap area, the process comprising the steps of:
rotating the hollow shafts and the membrane discs mounted thereon at a rotational speed;

introducing the fluid into at least the overlap area of the filtration device;
creating overflow speeds at the membrane surfaces;
creating a turbulence between the membrane surfaces of at least two membrane discs in the overlap area;
diffusing a portion of the fluid through the membrane surfaces of the membrane discs into the hollow disc body to create a permeate within the hollow disc body and a concentrate exteriorly of the membrane surfaces;
collecting the permeate within the hollow shaft from the hollow disc bodies of the membrane discs mounted thereon;
discharging the permeate from the hollow shaft as the flow of filtrate; and
discharging the flow concentrate from the overlap area at an overpressure.

9. (new): Process for cross-flow filtration of a fluid to produce a flow of concentrate and a flow of filtrate using a filtration device having a plurality of rotating membrane discs mounted on at least first and second hollow shafts, each of the membrane discs having a hollow disc body in fluid communication with the associated hollow shaft and first and second membrane surfaces, the membrane discs mounted on a one of the hollow shafts overlapping the membrane discs mounted on another of the hollow shafts in an overlap area, the process comprising the steps of:

rotating the hollow shafts and the membrane discs mounted thereon at a rotational speed;
introducing the fluid into at least the overlap area of the filtration device;
creating overflow speeds at the membrane surfaces;
creating a turbulence between the membrane surfaces of at least two membrane discs in the overlap area;
diffusing a portion of the fluid through the membrane surfaces of the membrane discs into the hollow disc body to create a permeate within the hollow disc body and a concentrate exteriorly of the membrane surfaces;
collecting the permeate within the hollow shaft from the hollow disc bodies of the membrane discs mounted thereon;
discharging the permeate from the hollow shaft as the flow of filtrate; and
discharging the flow concentrate from the overlap area at an overpressure of 10 to 14 bar.